What is claimed is :

1. A modular ultrasonic clutch mechanism comprising:

an AC power control unit including an AC power supply for supplying AC power to a piezoelectric element with electric conductors via carbon brushes; a control switch for controlling the connection or disconnection between the AC power supply and the carbon brushes; two slip rings for introducing the AC power to said piezoelectric element; four carbon brushes; and a brush holder for connecting the supplied AC power to said slip rings;

a driving member being a ultrasonic vibrator for generating a mechanical vibration, and being able to disconnect the clutching operation between the driving and the driven members by a radiation field induced using the mechanical vibration; said driven member being a ultrasonic vibrator for providing means to keep a non-contacting state with said driving member;

two supporting frame units, wherein each of them contains a supporting frame for supporting a bearing appropriately along the center line of the mechanism; said bearing for supporting the shaft of said driving and said following members; and a spring washer equipped between said supporting frame and said bearing for providing a pre-loaded force;

two connectors for connecting said driving and said driven members to the rotating terminal of said mechanism; and

a pedestal for mounting said supporting frame units.

as said driving member is energized by an AC power supply, a vibration occurs on its surface thereof which includes a radiation pressure field that causes the contact surfaces of said driving member and said driven member to be separate and no braking effect is produced; the braking effect is produced, and the contact surfaces of said driving member and said driven member are coupled by tight contact between said two surfaces when at least

one of said driving member and said driven member is not energized by an AC power supply.

2. The clutch mechanism as in claim 1, wherein said ultrasonic vibrator is formed of a pair of adjoining piezoelectric elements, two non-adjoining cylindrical metal blocks, and two slip rings, and the above components are tightly connected by a threaded bolt and a nut.

3. The clutch mechanism as in claim 1, wherein said driving member or said driven member is a piezoelectric resonator.

4. The clutch mechanism as in claim3, wherein said piezoelectric resonator is formed of a piezoelectric element, a metal bock, and a slip ring.

5. The clutch mechanism as in claim 1, wherein said driving member or said driven member is made of a piezoelectric substance.

6. The clutch mechanism as in claim 1, wherein said driven member is a metal disc.

7. The clutch mechanism as in claim 1, wherein said driven member is a rigid non-metallic plate.

8. The clutch mechanism as in claim 1, wherein said supporting frame has an inner-threaded hole to fasten a pre-loaded force adjustment means.

9. The clutch mechanism as in claim 1, wherein the contact surface of said driven member is provided with a stud tenon, while the corresponding contact surface of said driving member is provided with a slot mortise so as to form a confinement means for

making the axial line of the motor and the load shafts along a straight line.

10. The clutch mechanism as in claim 9, wherein alternatively, said slot mortise is formed on the contact surface of said driven member, while said stud tenon is formed on the contact surface of said driving member.

11. The clutch mechanism as in claim 1, wherein a friction brake is fixed on each of the contact surfaces of said driving member and said driven member.

12. The clutch mechanism as in claim 1, wherein the driving and the driven members are substitutional for each other.

13. A modular ultrasonic brake mechanism comprising:

an AC power control unit including an AC power supply for supplying AC power to a piezoelectric element with electric conductors via a carbon brushes; a control switch for controlling the connection or disconnection between the AC power supply and the carbon brushes; two slip rings for introducing the AC power to said piezoelectric element; two carbon brushes; and a brush holder for connecting the supplied AC power to said slip rings;

a driving member being a ultrasonic vibrator for generating a mechanical vibration, and being able to disconnect the clutching operation between the driving member and a friction brake by a radiation field induced using the mechanical vibration;

a friction brake being a metal block;

a supporting frame unit containing a supporting frame for supporting a bearing precisely along the center line of the

mechanism; said bearing for supporting said friction brake by inserting the latter into the former; one end of said friction brake being connected to a rotational terminal of said mechanism; and a spring washer equipped between said supporting frame and said bearing for providing a pre-loaded force;

a pre-loaded force adjustment means installed in the center hole of said supporting frame to couple with the outer-threaded surface of the pre-loaded force adjustment means just passing the center hole of said supporting frame for adjusting the frictional force between the contact surfaces of said driving member and said friction brake; and

a pedestal for mounting said supporting frame unit.

14. The brake mechanism as in claim 13, wherein said ultrasonic vibrator is formed of a pair of adjoining piezoelectric elements, two non-adjoining cylindrical metal blocks, and two slip rings, and the above components are screw engaged one another with a threaded bolt and a nut.

15. The brake mechanism as in claim 13, wherein said driving member is a piezoelectric resonator.

16. The brake mechanism as in claim 15, wherein said piezoelectric resonator is formed of a piezoelectric element, a metal block, and a slip ring.

17. The brake mechanism as in claim 13, wherein said driving member or said friction brake is made of a piezoelectric substance.

18. The brake mechanism as in claim 13, wherein said driving member can serve as a brake means for controlling rotational

motion or linear motion

19. The brake mechanism as in claim 13, wherein the driving member and the friction brake are substitutional for each other.